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Editor, Milton Hoffman

Assistant editor, Jeanne Starr Park

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FRESH FARM PRODUCE FLIES TO MARKET

FRESH flowers, fruits, and vegetables are flying high, wide, and wholesome by air freight. But it's only V.I.P. (very important produce) that merits this special transportation —produce of high value and high quality, often the first of the season, usually mature and ready for market.

Highly perishable, these commodities are in need of speedy transportation from producer to consumer. Air freight provides this service.

It does not, however, afford refrigeration facilities nor humidity controls. And therein lies the problem. Special provisions must be made to preserve the quality of the fruits, vegetables, and flowers while they are transported by air.

To find out exactly where the problem areas lie and what can be done about them, the Biological Sciences Branch of AMS and the University of California recently studied 116 different perishable agricultural commodities under simulated flight conditions.

They found that successful air transportation depends almost entirely upon careful preflight preparation. Precooling of the produce is imperative. So are proper handling, good packaging, and adequate insulation.

Lacking any of these, it is impossible to control the temperature or the humidity around the fruit as the plane soars through wide extremes in altitudes and temperatures.

Precooling may be accomplished by several methods—cold water, cold air, ice, or the recently developed vacuum cooling method. All are equally acceptable.

Once precooled, the commodity must be kept cold in refrigerated field lockers, delivery trucks, and airport storehouses.

Regardless of the weather, properly precooled perishables usually remain at a desirable temperature range during a flight of a few hours.

Insulation, however, offers further protection against temperature changes—either upward or downward. Insulation protects the produce against the sun's heat during stops as well as the threat of freezing at high altitudes. It can be provided by means of insulated compartments, load blankets, and special shipping cases.

In noninsulated compartments, lower transit temperatures are likely to occur near the walls and floor. So, it's wise to stow the cargo away from these surfaces during cold weather. Even in warm weather, it's not a good idea to use these areas because the desired cooling effect obtained in flight is offset by a greater warming up during ground stops.

Fortunately, chill injury isn't likely to occur during the usual plane trip. However, a temperature of 50° F. over a period of 48 hours may be dangerous to some tropical fruits and flowers. To guard against chilling, a thin aluminum foil liner should be inserted in each package of tropical produce before shipment.

Research for this study was conducted by L. L. Claypool and L. L. Morris of the University of California and W. T. Pentzer and W. R. Barger of the Biological Sciences Branch, AMS.

Humidity controls also may be achieved by preflight planning. To offset the low water content of the rarefied air at high altitudes, careful packaging and handling are required. In the case of flowers, moisture can actually be added to the package. Tomatoes, cantaloupes, citrus fruits, and cucumbers are frequently waxed to reduce water loss.

AMS researchers found that low atmospheric pressures didn't seem to bother perishable commodities very much. Of the 34 different fruits and vegetables tested for pressure reactions, no injury occurred as a result of high altitudes or rapid climbs or descents. Only in a severe test simulating a climb of 5,000 feet a minute up to 50,000 feet did splitting occur in some ripe tomatoes and persimmons. This was at 45,000 feet.

Flowers are somewhat more sensitive than this. While they suffered no ill effects at 20,000 feet, carnations, roses, sweet peas, and mums showed slight to moderate withering between 30,000 and 50,000 feet.

One of the chief dangers in air transportation is the mixing of commodities. Some fruits and vegetables don't travel well together.

Ripening fruits, for example, give off small amounts of volatile gases which are not good for other commodities. Flowers and immature fruits, like cucumbers and green peppers, should not be stored alongside mature fruits. And, no perishables should be mixed with general freight.

As air transportation of fresh produce becomes more popular, greater consideration is being given to developing fruits, vegetables, and flowers with characteristics suitable for air travel. This research begins with the selection of an adaptable variety in the field and the application of preharvest treatments. Together with careful packaging and handling, this will bring fresh fruits, vegetables, and flowers to market in even better condition—by air.

Maintaining Vitamin C Content of Vegetables

HIGH STORAGE temperatures and low humidities tend to rob fresh vegetables of their vitamin C content.

This loss is particularly important since 94 percent of all the vitamin C consumed by Americans comes from fresh fruits and vegetables. The body requires a daily supply of vitamin C, and it requires it in rather large amounts.

To find out how well fresh vegetables retain this vitamin during storage and how vitamin C content is affected by wilting and storage temperatures was recently studied by the Marketing Research Division of AMS.

It was found that vitamin C loss can be drastically reduced by the use of refrigeration. However, refrigeration is not the sole answer. Cool temperatures should be combined with high humidity and little or no air movement. Even under the most ideal conditions, some vitamin loss constantly occurs.

Certain vegetables are more vulnerable to Vitamin C loss than others. Usually these are the leafy green vegetables which are particularly susceptible to wilting. They tend to lose moisture rapidly and, at the same time, to lose some of their vitamin C content.

For this reason, AMS scientists centered their attention on such vegetables as kale, collards, turnip greens, spinach, rape, cabbage, and snap beans.

As might be expected some of these vegetables lose vitamin C much quicker than others—even under the same conditions. Spinach, collards, rape, turnip greens, and kale are the most vulnerable to vitamin C loss and wilting. A high humidity is especially important in storing these leafy green vegetables.

Cabbage and snap beans, on the other hand, are more able to withstand low humidities. Cabbage loses ascorbic acid and moisture less rapidly than most leafy vegetables. Snap beans are also slow to lose both moisture and vitamin C. Wilting conditions have little effect on the rate of loss of ascorbic acid in snap beans.

All the vegetables tested came from local wholesale markets. They were subjected to test temperatures of 32°, 50°, and 70° or 75° F. Humidity was varied for each temperature and each vegetable.

The more sturdy vegetables—that is, those most resistant to wilting—suffered the least vitamin loss. Cabbage, for instance, lost vitamin C slowly, in contrast to kale, which lost around 1½ percent of its total vitamin C content each hour it was at room temperature.

Too low temperatures, however, are not desirable either. Low temperatures can result in chill damage. When this occurs, the product becomes visibly injured and valuable quantities of vitamin C are lost.

Proper storage conditions are, therefore, essential to the maintenance of vitamin C content in fresh vegetables. They are especially important for leafy green vegetables which are easily susceptible to wilting. Much of the naturally high vitamin C content of these vegetables can be lost if produce wilts in storages of too high temperatures and too low humidities.

Research for this study was conducted by Boyce D. Ezell, plant physiologist, and Marguerite S. Wilcox, fruit and vegetable technologist, of the Marketing Research Division, AMS.

Rendering Inedible Animal Fats

by John W. Thompson

RENDERERS and slaughterers of farm animals have turned an age-old process—rendering of inedible animal fats — into an important industry. Already a large-scale operation, it still has a tremendous potential as a market outlet for fats from American farms.

Through the more efficient operation of their plants and the production of high quality fats, renderers can not only increase their overall market, but increase their profits as well.

Production of inedible tallow and grease has been on the upswing ever since 1947. More high quality inedible fats are needed for export, and there's a growing domestic demand for high grade inedible tallow and grease.

Livestock feed, enriched with animal fats, has opened up a broad new outlet. An untapped market several years ago, processed feeds now take about 12 percent of the total domestic consumption of inedible animal fats.

How renderers and slaughterers can make the most of this, and other, market opportunities has been pointed up in a recent AMS study of rendering plants in Minnesota and Pennsylvania.

These two States do a $11-million-a-year business in inedible fats. They produce 5.6 percent of the total United States' production.

Yet, renderers in both these States are producing less efficiently and profitably than they might.

Here's what AMS researchers found:

Many of the rendering plants were manual operations. Antiquated equipment, practices, and methods of rendering still existed.

Less than half of the renderers and slaughterers in Pennsylvania and Minnesota made any attempt to separate dark and light fats before cooking. Only 7 percent of the renderers and 64 percent of the slaughterers washed raw material before cooking.

There was no set standard for temperature, agitator speed, length of cooking, or percent of moisture left in the tankage when cooking was done.

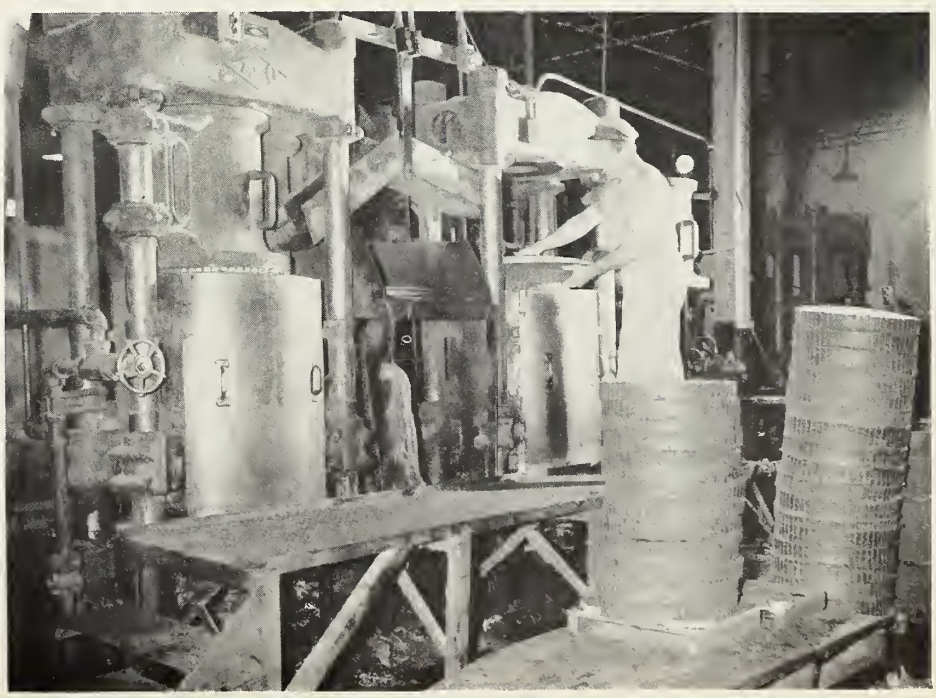
Collection routes were poorly organized and overextended. Storage facilities were generally inadequate, and few plants had facilities for determining the grade of fat produced.

For a more efficient, productive, and profitable rendering enterprise, AMS recommends:

- Change the routing of collection trucks when new accounts are added; reorganize routes so that trucks return to the plant at different times during the day to spread out the work load.
- Separate light and dark fats before cooking. Wash and cook all material as quickly as possible.
- Use split shifts so that only a few workers are necessary in the morning before the raw material arrives at the plant. (This will materially aid in reducing idleness and cutting down labor costs.)
- Invest in conveyors to move raw materials to the hasher and cooker and tankage to the grinder and storage bins.
- Have adequate storage facilities so the product can be held until the price is favorable.
- Invest in the materials and equipment necessary to analyze the color, moisture, and free fatty acid content of the fat produced and in storage.
- Finally, know your business. Know the weight and yield of fat and tankage from raw materials as well as processing, collection, and marketing costs, and from this determine how much can be paid for the raw material.

These few, practical suggestions can turn a good rendering operation into an even better one. If renderers and slaughterers follow the recommendations, they'll be able to make very real dollar savings not only for themselves but for the farmer and the consumer.

This hydraulic press requires full time of one man; screw press, only 25 percent of a man's time.



The author is an agricultural economist in the Marketing Research Division of AMS.

To determine the protein content in a sample of wheat, a Kjeldahl test is run. Here, an AMS laboratory technician at Beltsville, Md., checks a row of Kjeldahl apparatus.

Change in the description of exported wheat may help United States farmers sell more of their grain abroad

USDA Issues New Protein Certificates

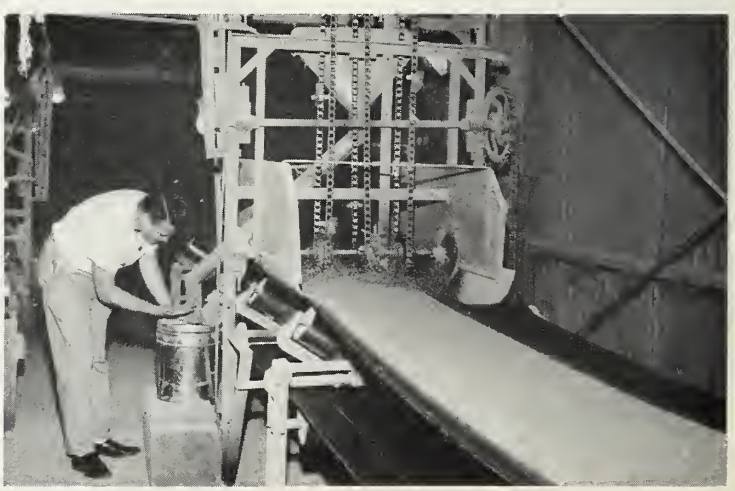
USDA grain inspector takes sample of wheat by cutting stream of grain with his "pelican." Inspector shown at right checks grain from automatic sampler before taking sample for analysis.

Two shiploads of wheat recently left the port of Galveston, Texas, covered by protein certificates issued by the U. S. Department of Agriculture.

This was the first time such information had been officially prepared for an exporter. It will not, however, be the last.

AMS wheat specialists believe other exporters will soon request similar information. Two of the largest millers in England have already stated that in the future they will demand protein certificates with U. S. wheat.

Issuance of these certificates is a service under the Agricultural Marketing Act and supplements inspection service under the U. S. Grain Standards Act.



our changing FLUID MILK MARKETS

by Ellen Henderson

DAIRY COWS in Wisconsin and Iowa are producing milk for Miami breakfast tables. . . . Minnesota milk is being transported for sale in Louisiana. . . . Milk from Missouri is going to Corpus Christi, Texas.

Distance is no longer a big obstacle. Improved technology and reduced transportation costs have melted away the miles between production and consumption areas. Many previously separated milk markets have been consolidated.

This is in sharp contrast to the milk marketing pattern of the early forties. Before World War II, milk for fluid markets came mainly from nearby farms. There was little or no cross-country distribution until the wartime needs of production workers and military personnel in congested areas made it necessary to draw auxiliary milk supplies from distant regions. Although producers met this wartime emergency by increasing their distribution areas, the long distance transportation of high-quality milk was still difficult and costly.

That's why it wasn't until after the war that milk sales routes began to expand. A lot of technical difficulties had to be overcome first. Once solved, regular deliveries of fluid milk—both in bulk and in packaged form—were soon moving from the dairy producing areas of the North Central States to the heavily populated areas of Florida, Texas, and the Gulf Coast.

As the marketing areas expanded, the areas in which Federal milk orders establish milk prices also grew larger. In the 2-year period between 1956 and 1958, 21 of the 63 marketing areas defined by Federal milk orders were revised and enlarged. These market areas were increased an average of 43 percent; 3 areas were more than doubled in size.

The largest expansion occurred in the New York City market. Here, the Federal order recently was enlarged to include upstate-New York cities and the urban areas of northern New Jersey. The New York-New Jersey market now serves more than 17 million customers. Fifty thousand dairymen supply 16 billion pounds of milk for this area each year.

In this and all other milk markets under Federal orders, a system of minimum prices exists. All handlers doing business in these areas are required to pay farmers the same prices for milk. The level of these prices is determined by the U. S. Department of Agriculture after public hearings of producers, handlers, consumers.

Federal milk marketing orders are issued only for markets in which dairy farmers request the program. Often, however, milk markets grow so large they overlap. This gives rise to requests for consolidation. Producer groups then ask that separate markets be brought together under a single pricing sysem.

The expansion and consolidation of Federal milk orders have become more frequent in recent years. Only four mergers took place in the decade between 1947 and 1956. Yet, in a single year—1957—three mergers occurred. That year, the Federal order programs in Akron and Stark county, Ohio, were combined; the Oklahoma City and Tulsa-Muskogee, Okla., orders were merged; and the separate orders for Topeka and Kansas City, Kans., were made into one.

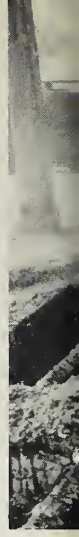
Further extension of milk distribution systems and a gradual lessening of individual market identity may be expected in the future. Improvements in transportation, packaging, and quality control will give distributors added incentives to increase the efficiency of their processing operations by handling a larger volume of milk.

The continued expansion of fluid milk markets will, no doubt, be reflected in similar expansions of areas where prices are established by Federal milk orders. Federal orders are currently operating in 76 milk markets across the country. About half the nonfarm population of the United States resides in these areas.

The author is a marketing specialist in the Dairy Division of AMS.

The rosin story begins with tapping of trees in the forest.

Mule-drawn wagon is used to collect gum in woods, carry barrels to road.

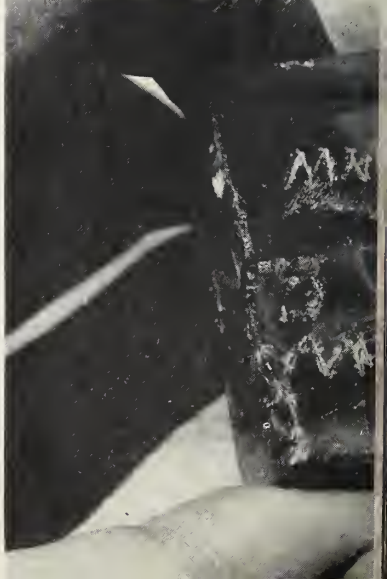


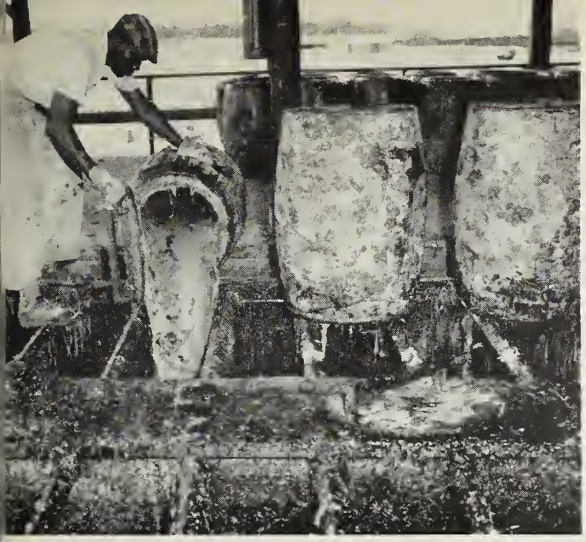
Crude p

INSPECTION AND GRADING OF GUM

Grade mold is filled with gum rosin. Rosin sample becomes hard when cool and is kept for grade identification of rosin in drum. Although plant employee is licensed to grade rosin, grading is checked by AMS official.

This is how a gum rosin sample looks as
Below are two gum rosin samples as mark





flows from barrel to steam-jacketed vat at processing plant.

Row upon row of rosin drums stand gleaming in the sun outside a processing plant.

ROSIN

IN THIS country and in most foreign countries, USDA grade standards, made of glass, are used as the basis for all buying and selling of rosin. They provide producers, processors, and consumers with an exact evaluation of each batch sold.

Officially, there are 12 rosin grades—X, WW, WG, N, M, K, I, H, G, F, E, and D. Only the lighter or upper grades (K and above) are regularly offered on the market. The two most popular grades are Water White (WW) and Winter Glass (WG).

Although differences in the grades do not appear large, the first four grades vary considerably in price, thus making USDA grading particularly important to all who produce, distill, and buy rosin.

s from mold at naval stores processing plant.
ant with month, day, batch number, and grade.

Federal Supervising Inspector T. E. Herndon (left) discusses grade of rosin samples with licensed inspector at plant. Most grading is done outdoors where comparison with standards is more accurate.

The rosin story begins with tapping of trees in the forest.

Mule-drawn wagon is used to collect gum in woods, carry barrels to road.

Crude rosin gum flows from barrel to steam-jacketed vat at processing plant.

Row upon row of rosin drums stand gleaming in the sun outside a processing plant.

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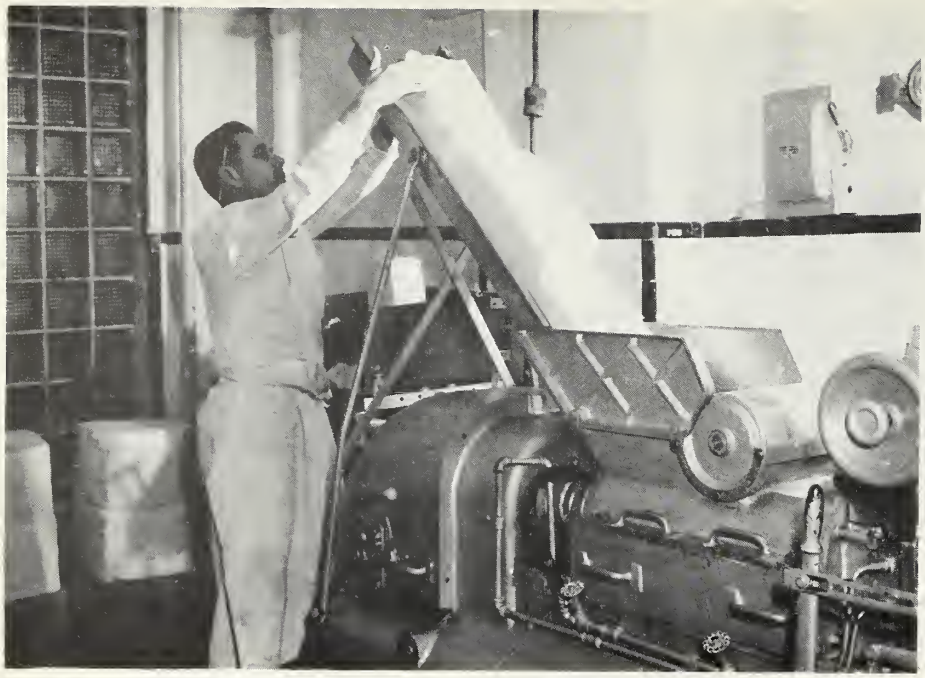
Grade mold is filled with gum rosin. Rosin sample becomes hard when cool and is kept for grade identification of rosin in drum. Although plant employee is licensed to grade rosin, grading is checked by AMS official.

This is how a gum rosin sample looks as it comes from mold at naval stores processing plant. Below are two gum rosin samples as marked at plant with month, day, batch number, and grade.

Federal Supervising Inspector T. E. Herndon (left) discusses grade of rosin samples with licensed inspector at plant. Most grading is done outdoors where comparison with standards is more accurate.



Modern machines, like this up-to-date butter cutter, help reduce labor costs and hold down the marketing margin for butter. This particular machine forms the huge chunks into quarter-pound prints.

MARKETING MARGINS FOR BUTTER

UNLIKE the increasing margins for most farm commodities, the marketing margin for butter has remained relatively stable during the past 10 years. These margins have kept within a 3-cent range—between 20.1 and 23.2 cents.

In terms of percentage, the butter margin in 1958 was 15 percent greater than the 1947-49 average, while the margin for all dairy products showed an increase of 38 percent.

Despite the decline in per capita consumption, creamery butter has continued to provide farmers with the largest single outlet for milk for manufacturing purposes. In 1958, the butterfat from 24 percent of the total amount of milk produced in the U. S. was used directly for making butter.

Down through the years, the payment received by the farmer for butterfat has fluctuated considerably. From 1919 to 1958, the farmer's share of the retail price has ranged from a low of 53 percent in 1932 to a high of 84 percent in 1944. In 1958, the farmer's share was 69 percent. The wholesale-retail spread increased approximately 6 cents between 1947 and 1958 while the farm-wholesale margin decreased by 2 cents.

Since the war, rising costs and severe competition from the increased consumer use of margarine and other nondairy fats have stimulated important changes in the butter industry. These changes have affected all phases of the organization and operation of the industry, from methods of procuring the raw materials to the marketing of the finished product.

Manufacturing plants are now larger, more modern, and more diversified than those of the prewar period. Creameries and wholesale butter receivers have tried to reduce transportation and handling costs by more efficient consolidation of butter in preparation for carload shipment to the larger consumer markets. These agencies and larger retail handlers, such as chain stores, have sought ways to eliminate some of the intermediate steps between the creamery and the retail outlet.

All of these changes are bringing about the more effective use of the labor, supplies, equipment, and transportation services involved in the marketing of butter. At the same time, there has developed a fuller utilization of both the fat and nonfat solids in milk produced by farmers.

To provide greater understanding of these changes, AMS researchers have studied the ways in which butter is now marketed. Included in this study are observations of 10 actual shipments of butter.

These case studies indicate the diversity of the problems involved and something of the uniqueness of each marketing process. Descriptions of these shipments, together with data on the charges and operating margins of the marketing agencies involved, are contained in Marketing Research Report No. 289, which was issued in January 1959.

The report shows how many separate agencies, each with its own service charges, are involved in a single butter shipment. For example, there may be: (1) Haulers of milk or cream from the farm; (2) the creamery which manufactures the butter; (3) a trucker who delivers the butter to a concentration point; (4) a transportation agency (truck or rail) which takes the butter to the wholesale buyer or other first receiver where it is printed and packaged; (5) hauling to a jobber-wholesaler; (6) resale and delivery to a retail outlet; and (7) the retail outlet.

The product must be refrigerated and otherwise protected from quality deterioration at each step of the way. Practices to maintain quality are receiving more attention all the time.

There has also been increased voluntary use by the trade of USDA butter grading services. Concurrently, there has been a trend toward selling more butter under brand names and, in some cases, there has been more emphasis upon advertising and other promotional techniques.

End Displays Increase Sales of Canned Foods

CANNED GOODS placed at the end of a regular row of display cases entice customers into making that extra purchase they would otherwise go home without.

According to analysts in the Marketing Research Division of AMS, this is true for all types of end displays — whether the merchandise is in a jumbled (dumped) basket, a formal basket display, or neatly piled can on can.

In tests conducted in several modern food stores in Boston, sales of 46-ounce cans of grapefruit and tomato juices of a selected brand were nearly 3 times greater when an end display was used in addition to a regular shelf display than when sales were made from a regular shelf alone. Cut wax beans and large sweet peas, also of a selected brand, sold 2½ times better.

The increase in sales of the test items did not adversely affect sales of selected substitute items — peas, cut wax and green beans, and grapefruit and tomato juices, other than the test brand, grade and can size, or orange juice of all brands and can sizes. In total, sales of the test and substitute items showed an overall increase of approximately 25 percent during the weeks the end displays were in effect over a similar period when the items were displayed on the shelf alone.

Of the three types of end displays included in the AMS study of 46-ounce cans, the jumble basket was the most successful. Its hodge-podge arrangement and "bargain" look made it 25 percent more effective than the pile-on display.

It was also the most economical to build and restock. For example, large cans of grapefruit juice and tomato juice were handled at a cost of only 53 cents per 100 cans sold.

Next in both efficiency and sales was the formal basket display. This arrangement brought 16 percent more sales than the pile-on display, with costs averaging 68 cents per 100 cans sold.

The pile-on display, while significantly better than the regular shelf display alone, was the least effective in stimulating sales. It was also the most costly to erect, restock, and take down. The store paid labor costs of $1.15 per 100 cans sold.

By actual count, 2,136 cans of grapefruit juice and tomato juice were sold from regular shelf displays during the 8-week test period. This number jumped to 5,207 cans with both regular shelf and end displays in stores using the pile-on display; 6,037 cans in stores using the formal basket; and 6,418 with the jumbled basket.

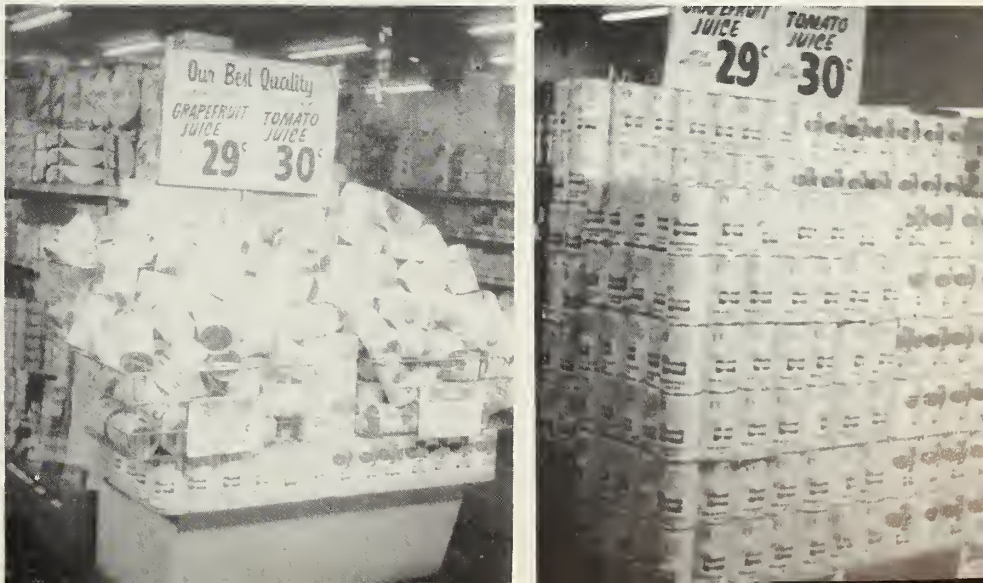
When smaller, No. 303 cans of beans and peas were used, sales from the three different types of end displays also were greater than regular shelf sales, but none of the end displays differed significantly in sales influence. Cost advantages for the jumbled basket, however, were even greater for the small size cans than for the large cans.

In another phase of the AMS study, newspaper advertising and price reductions were used in conjunction with special displays. This increased sales even more. Canned peaches that were actively promoted for a 4-week period sold 9½ times better than usual during the first week, 5½ times better for the month-long promotion period.

Canned beans and peas, when featured in special displays and advertised at a reduced price, moved 4 times faster than when not promoted.

So, when a retailer wants to push the sale of specific canned foods, it pays not only to put the products out where the customer can see them but to advertise them as well. This stimulates sales, brings increased returns to the retailer, and provides a broader market for our Nation's farm production.

Stores using both regular shelf and jumbled end display, shown at left, sold 6,418 large cans of juice during 8-week test period. Neater, pile-on display sold 5,207 cans; regular shelf, only 2,136.



Research for this study was conducted by Hugh M. Smith, Nick Havas, Violet Davis Grubbs, and Paul Wischkaemper of the Marketing Research Division of AMS.

MARKETING PRACTICES AND COSTS FOR FLAXSEED AT COUNTRY ELEVATORS

by W. M. Manion and C. Milton Anderson

COUNTRY elevator managers in the North Central States might take a good look at their flaxseed marketing costs. In many cases, money can be saved both at the elevator and enroute to terminal markets.

In a recent survey of 265 Minnesota, North Dakota, and South Dakota country elevators, AMS marketing researchers found freight costs accounted for 70 percent of the 40-cent-a-bushel price spread between farmers and terminal buyers. Other transportation charges came to 10 percent, and the gross elevator margin accounted for almost 20 percent of the total marketing spread per bushel of flaxseed.

Freight expenses ranged from an average of 56 percent of the marketing dollar in Minnesota to 73 percent in North Dakota. This resulted in a 23-cent per bushel price differential paid by elevators to growers whose farms are located at the eastern and western boundaries of the tri-State area.

About 10 percent of the freight charges result from the transportation of dockage (all matter other than flaxseed which has become mixed in with the seed). Less than 40 percent of this dockage is removed at the elevator, so about 60 percent is shipped on to terminal markets at elevator expense.

Flaxseed received at country elevators contained about 16.3 percent dockage during the 1955-56 crop year. While the amount of this dockage is reduced to about 10.3 percent at the elevator, the cost of shipping the dockage which remains in the flaxseed runs about 3 cents per net bushel of flaxseed.

The cost of cleaning flaxseed varies inversely with the volume handled. In the elevators studied by AMS, cleaning costs averaged 1.7 cents a bushel for elevators cleaning 50,000 bushels annually, but 5 cents a bushel for those with a cleaning volume of only 5,000 bushels.

This is rather high compared to the cleaning costs of other grains. But flaxseed requires a more difficult cleaning operation. Weed seeds are nearly the same size as the flaxseed, and they are hard to separate from the grain. Screenings may be sold at an average of between 1.5 and 3.5 cents per net bushel of flaxseed.

By screening flaxseed, an elevator operator gains a 5 to 15 percent increase in operating space and boxcar capacity. At most elevators which clean 10,000 or more bushels of flaxseed, the savings on freight costs alone would more than offset cleaning costs. The return from screening sales then becomes a bonus.

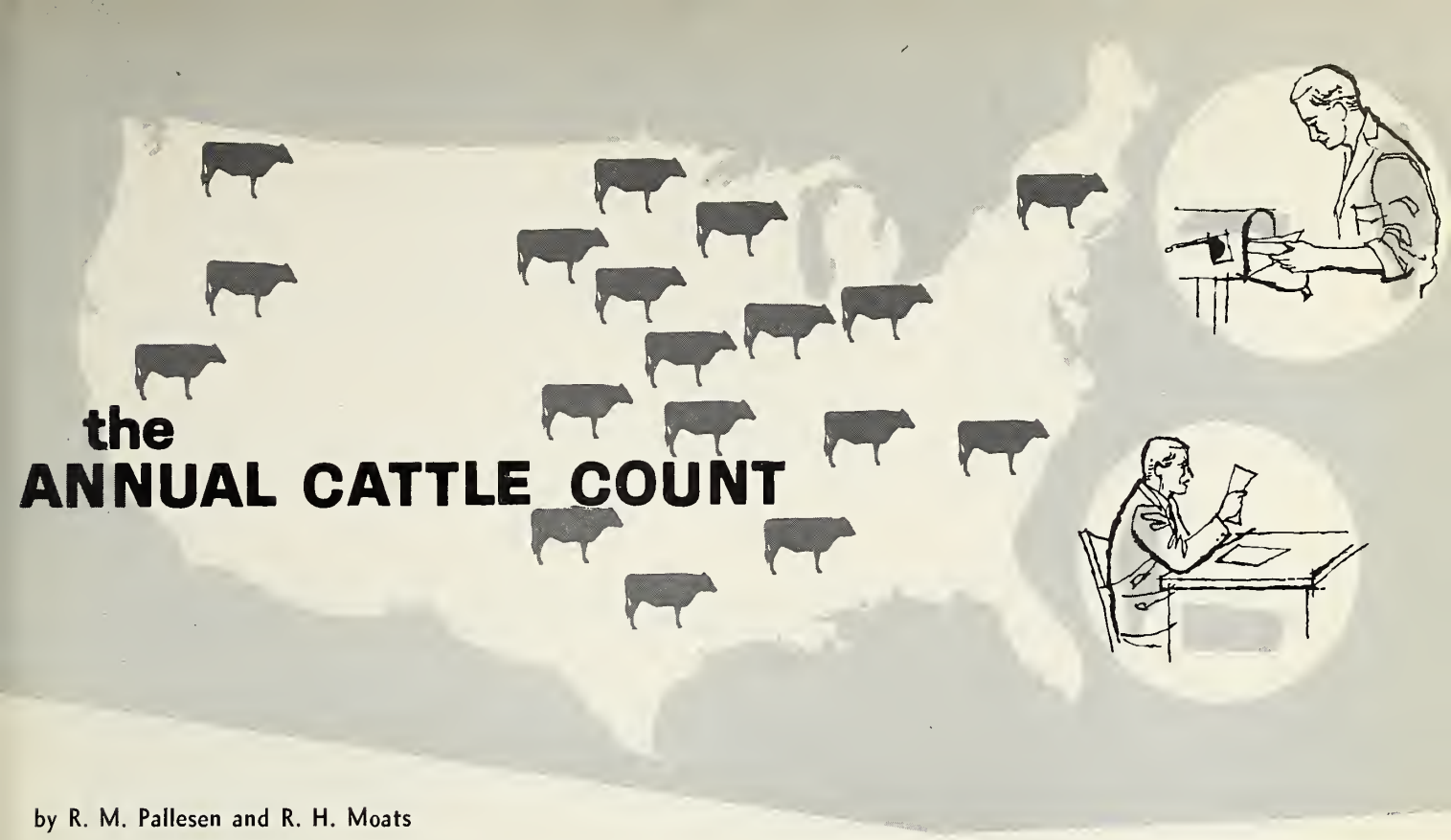
Country elevator operators generally use railroads to ship flaxseed, despite seasonal boxcar shortages. This choice of rail over truck transportation is due to the shortage of trucks in some areas, the lack of elevator truck-loading facilities, and a 5-cent truck unloading charge levied at the terminal.

In areas where both rail and truck transportation are available, truck costs averaged 1.8 cents per bushel lower than rail shipment. Truckers have the advantage in areas close to terminal markets and where return-trip loads are easily obtained. Much of the flaxseed, however, is shipped from distant elevators and here railroads are preferred. In these areas, truck rates plus the 5-cent unloading charge place motor-carrier costs about the same or slightly above those for railroads.

The higher elevator costs of flaxseed marketing are offset to a large degree by larger gross operating margins, cleaning the seed to reduce freight charges, and increased returns from the sale of screenings. When elevator operators employ sound handling practices, flaxseed marketing becomes equally as profitable as that of other grains.

Cleaning costs for flaxseed are high because the seeds are tiny and nearly the same size as weed seeds. Screening flaxseed, however, reduces the elevator operator's shipping and storage costs.

The authors are agricultural economists in the Market Organization and Costs Branch of AMS. They are stationed at St. Paul, Minn.



the ANNUAL CATTLE COUNT

by R. M. Pallesen and R. H. Moats

"WHAT'S the cattle count going be?" is a question often heard about the first of the year. It frequently raises another question: "What's the reason for the annual cattle estimate and how is it made?"

The first question is answered each February when the U. S. Department of Agriculture's Crop Reporting Board in Washington, D. C., gives livestock producers and handlers a preview of tomorrow's marketing picture by publicly announcing its estimate of the number of cattle on farms and ranches as of January 1.

The answer to the other question is more complex. The annual cattle count series, dating back almost a century, is aimed at giving everyone, at one time, the most accurate estimate possible of the number of cattle on our Nation's farms at the beginning of each year.

Information for the cattle-on-farms estimate is furnished by livestock producers, collected by rural mail carriers, and assembled by AMS field statisticians and cooperating State agencies.

About the first of December, a post-card-type questionnaire goes out to a sample of farmers. Rural mail carriers and star route operators leave the questionnaires in the mail box at each farm along a representative stretch of their routes. They are not asked to leave their regular routes nor do they personally contact farmers.

In areas not adequately served by either rural mail carriers or star route men, questionnaires are mailed directly to farmers. About 160,000 of these cards are filled out and returned each year. This means that about 1 out of every 20 livestock producers in the Nation reports basic facts about his own operation.

These reports from a cross-section of farmers and ranchers give an accurate indication of the year-to-year change in cattle numbers. A complete cattle count is made every 5 years by the Bureau of Census. This Census count, which will be made again this year, provides basic bench marks for the annual estimates for 5 years.

Several other sources also are tapped to help come up with accurate estimates of cattle on farms. During the year, surveys are made to get information on calf births, cattle and calf deaths, and farm and commercial slaughter. Supplemental information is gathered on railroad and truck shipments, market receipts, and State veterinary inspection records. All this material is used as a guide in appraising cattle inventory and disposition.

The current estimates, which are released about 6 weeks after the date to which they relate, are checked later with trends in the number of cattle assessed for taxation, State Farm Census data, movements, marketings, and slaughter, and are revised if necessary.

The information collected is processed at the State level in 42 field offices. These offices assemble the questionnaires and summarize and analyze the information obtained. After a survey card is returned by a producer, it is checked and summarized along with the other cards.

The State statistician, who is an AMS employee, is trained in agricul-

Mr. Pallesen is a livestock statistician with the Livestock and Poultry Statistics Branch, Agricultural Estimates Division, AMS. Mr. Moats is Chief of the Branch.

ture and is familiar with cattle production in his area. He travels widely over the State, visiting livestock markets and producers. Information he gets through personal contacts helps greatly in analyzing and interpreting survey results.

When the survey cards are summarized, various computations are made. From these, the State statistician arrives at an estimate of cattle on farms in his State. He then forwards the figures to the Crop Reporting Board in Washington, D. C.

In Washington, the information from the field office is reviewed. Adjustments are made when necessary, based on check data at the national level. Statisticians from at least five of the field offices are called in to help the Board estimate the number of cattle.

During preparation of the material in the field offices and during review in Washington, strict security measures are followed to prevent any leak of information. This is to prevent advance information going to persons who might profit financially from it. After the estimates have been released at the appointed time in Washington, State offices disseminate the information to wire services, newspapers, radio and TV stations, and others interested in the figures.

With the release of this information, the Crop Reporting Board answers the question: "What's the cattle count going to be?"

AMS Studies Ways to Reduce Apple Bruising

by Harold A. Schomer

EVERY TIME an apple is handled —from the time it is picked from the tree to when it arrives in the retail store—there's a chance it will be bruised.

The amount of bruising varies with the individual picker, packer, and warehouse operator. Where it occurs most and why has been studied by AMS horticulturists at the Wenatchee, Wash., Quality Maintenance Station.

Since about a third of the apples now arrive in retail stores in bruised condition, this research is particularly important to marketing men. Spoiled and unattractive fruit mean financial losses all down the marketing line. It also reduces consumer demand.

In studying handling methods up to the time of shipment, AMS researchers at Wenatchee have found several ways to cut down the amount of bruising that occurs.

They suggest, first of all, that each phase of the picking, handling, and packing operation be carefully supervised. This supervision may be implemented with rating systems or bonuses which give an added incentive for bruise-free handling.

In the orchard much of the bruising is due to *dropping* rather than *placing* the fruit in the picking containers. One picker checked by AMS caused 483 bruises to every 100 apples he picked, while another, more careful, picker caused only 15 bruises per 100 apples.

From 18 to 60 bruises per 100 apples occur during loading, unloading, and hauling operations. Again, the extent of the damage depends upon the care used by the handlers—in this case, the truck drivers and lift truck operators.

There is, however, much less bruising if the boxes of apples are placed directly on pallets on low-riding orchard trailers and hauled to the packing house without rehandling.

In washing, sorting, sizing, and packing, more bruises are likely to occur. The manner of dumping, type of leaf eliminator, speed and manner of progression through the machines, and type of dryer—all have an effect on bruising. Mechanical damage, however, can be kept to a minimum by properly timing the machines (especially the distributing rolls, singulators, and cups of the sizers) and reducing the difference in levels of adjoining units of equipment.

Already, much has been done to minimize bruising during the packing operation. Courses are given packers so they know exactly how to pack a quality product. These "educated" packers cause less than a third as many bruises as the poorest packers observed in studies made by the Washington State Apple Commission.

Damage to apples packed in standard boxes usually results from: Using force in the placement of the fruit; packing one tier higher than others; placing calyx end of Delicious next to end of box; slight misplacement of apple in pack; and oversized fruit.

By watching these several factors, much of the damage during packing may be eliminated. Bruising can also be reduced by avoiding an excessive bulge in the standard pack, and by adopting tray and cell packs.

The amount of bruising in lidding depends largely on the height of the bulge. Light packs usually have much fewer bruised fruit.

Boxed apples suffer relatively little damage during rail and truck transit. Most of the shipping damage occurs while loading the fruit into the cars and during unloading and movement to the retail stores.

Thus, AMS researchers find that at each step along the marketing route there's plenty of chance for an apple to become bruised. But, there are also many opportunities to reduce the extent of this damage. With strict supervision, well-timed warehouse equipment, and a good type of pack, apple producers and handlers can move a more bruise-free fruit through the marketing process.

The author is in charge of the Wenatchee, Wash., field laboratory of the Biological Sciences Branch of AMS.

Irrigation as a low-cost method of

Sewage Disposal for Poultry Processors

EFFECTIVE sewage disposal is a minimum operating requirement of the Poultry Products Inspection Act which went into effect January 1 for all poultry processed for interstate commerce.

To help poultry processors meet this requirement economically and efficiently, the Marketing Research Division of AMS has studied the irrigation method of sewage disposal.

This type of disposal plan offers a good outlet for plants that do not have low-cost city sewage facilities available. It meets both the requirement of economy and of efficiency.

Actually, there are two types of irrigation systems used for poultry waste disposal—the sprinkler system and the ridge and furrow system. Both work about equally well. But, because the ridge and furrow method requires a larger volume of effluent, it is not suitable for all processing plants. Therefore, AMS researchers centered their attention on the sprinkler system, which is particularly well suited for small-scale operations.

The sprinkler method is readily adapted to different rates of soil absorption, both hilly and flat lands, excessive slopes, and erosive soils. At the same time, it meets the disposal requirements of the slaughtering plant.

Rotating sprinkler heads mounted on pipes distribute the waste in the field. These may be either portable or permanently installed. Installation charges vary with the size of the system and the distance from the plant to the field. A sprinkler system for a plant slaughtering 3 million pounds of poultry a week, for example, would probably cost about $14,500 to install, not including land costs. For a plant slaughtering 18,000 pounds a week, installation costs would run about $800.

Once installed and in operation, the irrigation system would require a small continuing outlay for maintenance personnel. However, a small plant probably wouldn't run the system more than 15 minutes a day; a large plant no more than 4 hours.

An occasional overhaul of the pump would be the largest expense.

In the field, a good cover crop is essential. Hay crops generally offer the best protection for the soil. They prevent erosion and keep the soil from being packed by the falling water. Hay also quickly evaporates large amounts of water into the air.

A proper cover crop and a good system of waste disposal does much to improve the condition of the soil. If proper methods are used, land productivity may increase as much as 100 percent a year in dry areas. Even if the land is located in a humid climate, a 50-percent increase in productivity can be expected with proper management.

This is one of the big advantages in using the sprinkler irrigation system in waste disposal. The system helps pay for itself through increased crop yields.

However, before a processor installs this type of irrigation system, he should consult an engineer to see if it would work for his particular operation. He should also find out what health and sanitary regulations are in effect in his area.

There are, in addition, several other basic requirements:

- The method of removing blood and solids must be simple and inexpensive.
- The area to be irrigated should be away from heavily populated areas and public water sources.
- The soil should be able to absorb and dissipate the volume discharged from the plant.
- The cover crop must be adaptable to the region and should have high water-consuming properties.
- The irrigation system must be consistent with the locality, the climate, and the topography.

The information and recommendations in this article are based on a study made under a research contract with the USDA by the Midwest Research Institute.

AMS Assists in Settlement of Trade Complaints

Officials of the U. S. Department of Agriculture's Agricultural Marketing Service assisted in 1958 in the settlement of trade complaints involving more than $1 million worth of fruits and vegetables. These informal complaints were settled under the provisions of the Perishable Agricultural Commodities Act of 1930.

Formal proceedings also were handled under the Act. These, however, led to the issuance of reparation orders and suspension or revocation of Federal licenses.

More than 25,000 produce shippers, receivers, brokers, and others are licensed under the PAC Act. Persons subject to the Act, but who do not have a valid license, are barred from doing business in interstate or foreign commerce. A license may not be reinstated, nor a new one issued, until reparation orders are satisfied.

In addition to settling complaints, the Fruit and Vegetable Division of AMS, which administers the PAC Act, seeks to prevent misbranding or misrepresenting of produce.

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The Changing Market

Marketing Research Cuts Costs

Marketing research conducted by USDA's Agricultural Marketing Service is saving the American public—farmers, handlers of farm products, consumers, and taxpayers generally—many millions of dollars each year.

More than $25,000,000 a year in cash savings and benefits of new efficiency can be directly attributed to several of the major research projects of AMS.

For example, a new method of aerating stored grain has resulted in an annual savings of $1,500,000 in grain handling costs. It has saved another $1,000,000 through increased efficiency in the use of storage space.

Better cotton warehousing methods and handling also developed by AMS research, is saving $2,000,000 a year in handling charges for cotton.

Improved market centers in San Antonio, St. Louis, Philadelphia, and other cities are chalking up savings estimated at a total of $15,000,000 each year—with more to come.

A research-developed blood-spot detector for use in egg marketing promises a saving of $1,000,000 a year for the poultry industry.

Research to improve packing and handling of perishable fruits and vegetables—such as sweet cherries, pears, tomatoes, apples, plums, watermelons—is bringing savings of over $5,000,000 a year.

Texas carrot shippers are saving over $1,000,000 annually through the use of cheaper packing made possible through marketing research on hydrocooling and development of multiwalled bags.

Research showed California grapes shipped out of storage needed less refrigeration than they were getting. Result—a saving of $780,000 per year.

Another project indicated it wasn't necessary to wax Maine potatoes. So, the industry stopped—and saved itself $80,000 annually.

These are the results of but a few of the more than 500 research projects under way in the Agricultural Marketing Service. Each of these projects is pointed toward reducing marketing costs, improving marketing efficiency, and expanding the market for American farm products.

March Is National Egg Month

Food marketers will be taking part next month in a gigantic food promotion designed to boost the sale of eggs.

The poultry industry has already geared itself for a full-scale education, information, and promotion program during March—which has been designated as National Egg Month.

Reason for the big celebration this year is the generous supply of eggs expected to be on the market in March. With more layers on farms and production per layer likely to be at a new high, heavy supplies are in prospect.

To help market this abundant production, the Agricultural Marketing Service is giving its full support to the campaign. It is conducting a Special Plentiful Foods Program on eggs during the month.

The industry's Poultry and Egg National Board also will be pushing the campaign with colorful, powerful promotion materials. And, many merchandisers of complementary foods will tie in their promotions with National Egg Month.

Grain Storage Capacity

Increases in commercial and on-farm storage capacity kept pace with the record-breaking crop production of 1958. More than 8.4 billion bushels of grain and oilseeds were put under cover during the summer and fall without serious storage difficulties.

This was a tremendous accomplishment, particularly in view of the record carryover of grains already on hand when the 1958 crops were harvested. Almost 3.2 billion bushels of wheat, corn, barley, oats, rye, grain sorghums, soybeans, and flaxseeds were carried over from 1957.

Fortunately about 600 million bushels of new commercial space was made available early in 1958. On-farm storage facilities also increased substantially.

During the first 10 months of the year, about 10,000 farmers received loans under the USDA farm storage facility loan program to increase their storage capacity a total of 57 million bushels.